

Current
Policy No. 260

Presidential Classroom

New Science and Technology Roles in Foreign Policy

January 29, 1981



United States Department of State
Bureau of Public Affairs
Washington, D.C.

U. S. DEPT. OF STATE
MAR 10 1981
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Following is an address by Thomas R. Pickering, Acting Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs, before participants in the Presidential Classroom for Young Americans in Washington, D.C., on January 29, 1981.

I am extremely pleased to be with you today to share some thoughts on significant issues facing the United States in the foreign policy arena. The start of a new Administration is always a politically exciting time. I know it must be especially rewarding to be in Washington now for participants in the Presidential Classroom for Young Americans—a group with demonstrated leadership ability and a commitment to civic responsibility.

At the beginning of this century it was almost inconceivable that any issue or question could touch all or most of the world at the same time, with people in one area being deeply affected by issues well beyond their borders. In 1914 and again in 1939, it came home to all of us that world conflagration was a global question that could touch most of us, whether near to or distant from the source of conflict.

In the last decade and in the decades ahead we have and will see the emergence of many critical issues—such as population growth, pressure on resources and the environment, and energy availability—which have global significance and which also have a significant science and technology component. While my present position has sensitized me to science and technology issues, I think it is fair to say that the

relative importance of these issues in foreign policy already looms large and is growing.

A long-range look at the future through the year 2000 and beyond by the executive branch, indicates that the impact of science and technology in both domestic and foreign affairs will be accentuated over the next few decades. In its broadest definition, the study covers those global problems which affect the future of man's life on the planet. The principal focus is on population, resources, energy, and their relationship to world ecosystems.

As we look ahead over the next two decades it is clear that these questions will be crucial in determining our future. Most who have dealt with these long-term trends now see clear evidence that population, resources, and environment will be a major determinant of international relations; more so perhaps than the traditional areas that are thought of as sources of conflict—that is, economic competition or political and territorial differences. Indeed, these longer term global issues may well underlie the traditional sources of conflict and contention in the world. As a result, we need to devote more analysis, more attention, and more energy to understanding these questions and to dealing with them.

Setting and General Conclusions

The essential message of the report is clear, unequivocal, and unavoidable.

That message is, if present trends continue, the world in the year 2000 will be more crowded, more polluted, less stable ecologically, and more vulnerable to economic, social, and environmental disruption than the world we live in at present. It is fair to say that our analyses of each of the principal sectors—population, food, and energy—revealed no great surprises. The report is particularly significant, however, in its revelation of the close connection and mutual reinforcement among the problems with which it deals. The study showed a coalescence and “snowballing effect” of many of these problems due to their sheer scale and the magnitude of their individual growth rates.

Although I do not intend to review the range of problems described in the study, I would like to emphasize several principal conclusions.

World population growth is of primary concern. The number, movement, and physical needs of the 6.3 billion people projected for the year 2000 will be a controlling factor in resource availability and environmental quality. An estimated 90% of the growth in numbers will occur in those nations least able to provide for more people—the developing nations. The number of people being added each year is an average of one new Bangladesh every year for the next 20 years. Put another way, by the year 2000, four-fifths of humanity will be living in the poorest countries of the world. It is difficult even to imagine cities with 30 million people, as is projected for Mexico City, and the potential for social and political instability will be enormous.

World food supply is a second problem area. Food production is projected to increase by 90%. However, per capita food availability and nutritional levels will actually decrease over the next 20 years in some regions of Africa, Asia, and Latin America due to explosive population growth. And production increases will be based on more intensive use of existing cropland, which raises serious questions about the capacity of the soil, water resources, and energy supplies to continue to respond to such heavy pressures.

One of the major features of the study is the focus it places on the accelerating degradation of the Earth's renewable resource base. The rapid disappearance of the world's tropical forests, the spread of aridity and desert conditions, and the loss of plant and animal species at unprecedented rates have serious implications for the quality

of life around the world. A forested area half the size of California is disappearing each year and some 40% of the world's tropical forests may well have disappeared by the year 2000. This will threaten the existence of some 2 million species as well as induce major changes in water resources systems and intensify flooding and erosion.

Energy availability is another pressing problem. With population-induced demand rising rapidly, with oil and gas production leveling off worldwide, and with alternative sources of energy being introduced at a relatively slow pace, a growing gap between demand and supply will place major constraints on economic growth. For the two-thirds of humanity who rely on firewood for fuel, the disappearing forest cover portends changes that will threaten their very existence.

And, finally, the study projects a growing degradation of the quality of the Earth's air and water resources from the combined impact of industrial, agricultural, and municipal activities. Of special concern is the possible effect of fossil fuel combustion, deforestation, and the increased atmospheric buildup of ozone, fluorocarbons, and possibly other chemicals on global climate.

Looked at in its totality, a number of general conclusions emerge from the study.

- To begin with, this is the first time a government, and certainly the first time the United States, has undertaken such an extensive effort at long-range projections.
- Secondly, the study contains a richness of detail and information never before duplicated.
- Third, we have for the first time documented the extensive interlinkages which exist between such questions as population, the use of resources, depletion of forests, loss in water quality, and the disappearance of genetic reserves.
- Fourth, the pressure on our renewable resources is clearly greater than anyone would have expected or indeed been able to predict.
- Fifth, we have begun to challenge the idea that development and environment are inevitably in conflict; without careful attention to resources and the environment, development cannot proceed effectively or efficiently.
- Sixth, more work in the area of methodology and modeling is clearly required to develop a sound capacity to project future trends for policymaking.

Reactions

We have been, quite frankly, overwhelmed by the constructive and positive reactions to the study. The overwhelming reaction, both in the United States and abroad, has been that (1) the report correctly sets forth a series of critical, pressing global problems confronting mankind, and (2) that we must now move beyond the analyses and consider the measures nations can take independently and cooperatively to deal with the problems.

I would like to make clear now that while the picture that I have painted may seem bleak, I would remind you that problems and challenges tend to spawn scientific research and new technology. It is not realistic to expect a technological solution to every problem, but there will almost certainly be a number of new developments that will shape our future and impact on international affairs.

At this juncture, I want to focus also on one of the least understood aspects of the role of science and technology in foreign policy. Unlike the domestic technical agencies, the Department of State supports no broad program of scientific research, builds no missiles or other hardware, and manages no large-scale technological systems. Yet we are charged with major responsibilities in this area. Congress has directed the State Department to maximize the benefits and minimize the adverse consequences of science and technology in the conduct of foreign policy. Other statutes and executive orders give us important responsibilities with regard to nuclear nonproliferation policy, the oceans policies and negotiations, environmental concerns, population, and other important assignments.

How do we see our role in this complex new dimension of foreign policy? Clearly, the new realities present a challenge to diplomacy in the traditional sense. The swift pace of change, the greatly increased complexity of public affairs, the close linkage between domestic and international action, the emergence of problems that cut across existing jurisdictions—these are characteristics of the more complex and global diplomacy of today resulting from the impact of science and technology. The role of science and technology as important factors in foreign policy does not mean that the traditional skills of the diplomat are outdated. Analysis of the political motives of rulers, knowledge of cultures and languages, skills in interpersonal relations, and other qualities of traditional diplomacy remain important. But they need to be supplemented by an

appreciation of the opportunities—and the dangers—presented by scientific and technological development. Technological developments can cause or greatly exacerbate our political problems. Equally, scientific and technological cooperation cannot solve all difficult problems, but such cooperation can keep open dialogue and build the confidence that can help to solve problems.

Science in Diplomacy

The U.S. Government has found scientific cooperation to be a valuable asset in promoting our foreign policy. Such cooperation serves to cement the natural relationships that already exist with our allies and other friends. Also, scientific cooperation can be used to establish a positive and constructive new relationship. In this regard I would note that scientific cooperation served as the leading edge in regularizing our relations with the People's Republic of China.

As the leading scientific country in the world, many developing countries look to the United States as the primary source for science and technology for their development. We have an opportunity to be responsive to some of the needs of developing countries and establish relationships in the fields of science and technology which can lead to better trade and mutual economic benefits in the future.

GLOBAL 2000 REPORT

Volumes 1 and 2 of *Global 2000: Entering the Twenty-first Century* are available through the U.S. Government Printing Office, Washington, D.C. 20402. Volume 3 is expected to be released in 1981 and will also be available through GPO.

Volume	Stock No.	Price
Volume 1, The Summary Report	041-011-00037-8	\$ 3.50
Volume 2, The Technical Report	041-011-00038-6	\$13.00
To be released:		
Volume 3, The Government's Global Model	041-011-00051-3	\$ 8.00

It seems clear to me that in the future we will have to find better and more innovative ways to solve some global problems beyond trying to rely on real growth in assistance budgets. One of our objectives is to do a much better job of highlighting the significance of these long-term issues for people in the United States and other countries. The direct linkages are there—you are well aware of how much the developed world's industrial base depends on imported raw materials over which we have no direct control—but we must do a better job of explaining that air and water pollution respect no boundaries; that the loss of forests in the tropics affects economic and ecological interests in North America; that the expanding

immigration into the United States and other developed countries is being triggered by the degradation of natural resource bases of certain countries as much as it is by political problems; and, since impoverished nations do not make good customers or good neighbors, that the overall health and vitality of the developing world is central to our economic and security interests.

Focusing on these issues in a systematic manner can assist us in defining our national interests to encourage responsive relations with our economic summit allies and advanced developing countries without slighting the basic human needs of the poorest peoples. As long as the list is today, it is likely to be much longer and the policy choices much more difficult in the year 2000 if we do not deal more effectively with these problems now. This task clearly links science, technology, and our environment to foreign policy in the mainstream of American security and diplomacy. ■

Published by the United States Department of State • Bureau of Public Affairs • Office of Public Communication • Editorial Division • Washington, D.C. • January 1981 • Editor: Colleen Sussman • This material is in the public domain and may be reproduced without permission; citation of this source would be appreciated.

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